

I. INTRODUCTION

This document explains the basis for the proposed recommendations of the U.S. Environmental Protection Agency (EPA or Agency) in its Recovered Materials Advisory Notice (RMAN) II. The information presented here supplies the supporting analyses used by the Agency in developing the RMAN II and discusses EPA's overall objectives and the process and methodology used for making recovered materials content recommendations for items proposed for designation in the Comprehensive Procurement Guideline (CPG) II. Further details on the research conducted for each item proposed for designation are included in reports entitled "Potential Items for Designation in the Comprehensive Procurement Guideline" and "Recovered Materials Product Research for the Comprehensive Procurement Guideline II." Copies of these reports are located in the public docket.

II. BACKGROUND

Section 6002 of the Resource Conservation and Recovery Act of 1976 (RCRA) establishes a Federal buy-recycled program. RCRA section 6002(e) requires EPA to (1) designate items that are or can be produced with recovered materials and (2) prepare guidelines to assist procuring agencies in complying with affirmative procurement requirements set forth in paragraphs (c), (d), and (i) of section 6002. Once EPA has designated items, section 6002 requires that any procuring agency using appropriated Federal funds to procure those items must purchase them containing the highest percentage of recovered materials practicable.

Executive Order 12873 (58 FR 54911, October 22, 1993) directs EPA to designate items in the Comprehensive Procurement Guideline and publish guidance that list EPA's recommended recovered content levels for the designated items in Recovered Materials Advisory Notices. The Executive Order further directs EPA to update the CPG annually and the RMAN periodically to reflect changes in market conditions. EPA codifies the CPG designations in the Code of Federal Regulations (CFR), but, because the recommendations are guidance, the RMAN is not codified in the CFR. This process will enable EPA to make timely revisions to its recommendations in response to changes in a product's availability or recovered materials content.

In CPG II, EPA proposes 13 new items for designation. RMAN II recommends recovered materials content levels for the proposed items. The recommendations are organized into product categories, which correspond with the categories used in CPG II: construction products, transportation products, park and recreation products, landscaping products, non-paper office products, and miscellaneous products.

Executive Order 12873 directs EPA to update the recommended recovered materials content levels periodically to reflect current usage of recovered materials in designated items. On September 20, 1995, the Agency published a Federal Register notice (60 FR 48714), which established a process for the public to provide information on items that should be considered for designation and the recovered materials content for those items. Once a year, EPA will issue a Federal Register notice asking the public for information on products containing recovered materials. The timeframe specified in each notice will be chosen to allow the Agency sufficient time to review the information for consideration in the ensuing updates to the CPG and RMAN. Throughout the period designated in the notice, interested parties will be able to suggest items containing recovered materials for EPA to consider for designation, recommend recovered materials content levels within which these items are available, and suggest revisions to EPA's recommendations for purchasing existing designated items. Respondents may rely on existing information including brochures, sales manuals and specifications, as long as they address the types of information requested. EPA will consider all submitted information for future updates or revisions to the CPG and RMAN; however, submission of information or requests does not guarantee that EPA will designate an item or revise a recommended materials content level.

Table 1 provides a list of acronyms used throughout this document.

Table 1
Acronyms Used in the Recovered Materials Advisory Notice

Acronym	Term
AIA	American Institute of Architects
ANSI	American National Standards Institute
APP	Affirmative Procurement Program
ASTM	American Society for Testing and Materials
CALTRANS	California Department of Transportation
CFR	Code of Federal Regulations
CPG	Comprehensive Procurement Guideline
DLA	Defense Logistics Agency
EPA	Environmental Protection Agency
FR	Federal Register

Acronym	Term
GGBF	Ground granulated blast furnace (slag)
GMA	Grocery Manufacturers of America
GPO	Government Printing Office
GSA	General Services Administration
HDPE	High density polyethylene
HHW	Household Hazardous Waste
LDPE	Low density polyethylene
NSN	National Stock Number
NWPCA	National Wood Pallet and Container Association
OFPP	Office of Federal Procurement Policy
OMB	Office of Management and Budget
PET	Polyethylene terephthalate
PP	Polypropylene
ppm	Parts Per Million
PVC	Polyvinyl chloride
RCRA	Resource Conservation and Recovery Act of 1976
RMAN	Recovered Materials Advisory Notice
USPS	United States Postal Service
UV	Ultraviolet
VOC	Volatile Organic Compound

III. RECOVERED MATERIALS CONTENT

A. Use of Minimum Recovered Materials Content Standards

For most designated items, EPA recommends that procuring agencies establish minimum recovered materials content standards. For some items, the use of minimum content standards is inappropriate because the product is remanufactured, reconditioned, or rebuilt (e.g., cartridges for ink jet printers). In these instances, EPA recommends that procuring agencies use substantially equivalent alternatives to the minimum content standards approach as allowed in section 6002(i)(3) of RCRA. For

example, in the case of ink jet cartridges, EPA recommends that procuring agencies establish a two-pronged program consisting of (1) contracting for refilling expended ink jet cartridges and (2) purchasing refilled ink jet cartridges when replacement cartridges are needed. Minimum content standards are inapplicable because the recovered material is the expended cartridge, rather than individual components used to produce a new cartridge.

Under RCRA section 6002(i), it is the procuring agency's responsibility to establish minimum content standards, while EPA provides recommendations regarding the levels of recovered materials in the designated items. To make it clear that EPA does not establish minimum content standards for other agencies, EPA refers to its recommendations as "recovered materials content levels," consistent with RCRA section 6002(e) and Executive Order 12873.

In providing guidance in the RMAN, the Executive Order directs EPA to present "the range of recovered materials content levels within which the designated recycled items are currently available." Based on the information available to the Agency, EPA recommends ranges that encourage manufacturers to incorporate the maximum amount of recovered materials into their products without compromising competition or product performance and availability. EPA recommends that procuring agencies use these ranges, in conjunction with their own research, to establish their minimum content standards. In some instances, EPA recommends that procuring agencies establish a specific level (e.g., 100 percent recovered materials), rather than a range, because the item is universally available at that recommended level.

While EPA understands that specific minimum recovered content standards might be easier for procuring agencies to administer than a content range, which necessitates developing their own minimum content standards, EPA recommends ranges rather than minimum standards for several reasons.

First, the Executive order directs EPA to develop ranges, not minimum content standards or specific recovered materials levels.

Second, EPA has only limited information on recovered materials content levels for the new items proposed for designation. It would not be appropriate to establish minimum content standards without more detailed information because the standards may be treated as maximum targets by manufacturers and may stifle innovative approaches for increasing recovered material use. EPA hopes that the use of ranges will encourage manufacturers producing at the low end of the recovered materials range to seek ways of increasing their recovered materials usage. Minimum content standards are less likely to encourage such innovation.

Third, many items are purchased locally rather than centrally. As a result, the recovered materials content of the items are likely to vary from region to region depending on local cost

and availability of recovered materials. Minimum content standards are unlikely to be effective given the regional variance in recovered materials content because minimum content levels that are appropriate for one region, may be excessively high or low for other regions. A recovered materials content range gives regional procuring agencies the flexibility to establish their own recovered content standards and to make them as high as possible, consistent with the statute, given local product availability and market conditions.

EPA, once again, wants to stress that the recommendations in its RMAN are just that -- recommendations and guidance to procuring agencies in fulfilling their obligations under section 6002. The designation of an item as one that is or can be produced with recovered materials and the inclusions of recommended content levels for an item in the RMAN does not compel the procurement of an item *when the item is not suitable for its intended purpose*. Section 6002 is explicit in this regard when it authorizes a procuring agency not to procure a designated item where the item

"fails to meet the performance standards set forth in the applicable specification or fails to meet the reasonable performance standards of the procuring agencies." Section 6002(1)(B), 42 U.S.C. 6962(c)(B).

Thus, for example, EPA is proposing to designate shower and restroom dividers as items that are or can be produced with recovered materials content. The information the Agency has developed shows that these items are available in either steel or plastic with recovered materials content. However, if EPA adopts the proposed designation and recommendations for shower and restroom dividers, the mere fact that these are available with recovered materials content does not require the use of such items in every circumstance. The choice of appropriate materials used in construction remains with building engineers and architects. The effect of designation (and section 6002) is simply to require the purchase of items with recovered materials where consistent with the purpose for which the item is to be used. Procuring agencies remain free to procure dividers of materials other than steel or plastic where the design specifications call for other materials.

B. Methodology For Recommending Recovered Materials Content Levels

EPA identified and evaluated information regarding the percentages of recovered materials available in the items proposed for designation in CPG II. EPA also gathered and reviewed publicly-available information, information obtained from product manufacturers, and information provided by other Federal agencies. Based on this information, EPA

established recovered materials content level ranges for each of the proposed designated items. In establishing the ranges, EPA's objective was to ensure the availability of the item, while challenging manufacturers to increase their use of recovered materials. By recommending ranges, EPA believes that sufficient information will be provided to enable procuring agencies to set appropriate procurement specifications when purchasing the newly designated items.

It is EPA's intention to provide procuring agencies with the best and most current information available to assist them in fulfilling their statutory obligations under RCRA section 6002. To do this, EPA will monitor the progress made by procuring agencies in purchasing designated items with the highest practical recovered materials content level and will adjust the recommended content ranges accordingly. For some items, EPA recommends 100 percent recovered materials content levels because the items are already universally available at that level. EPA anticipates that other recommended ranges will narrow over time as other items become more available, although for technical reasons, many may never be available with 100 percent recovered materials content levels.

C. Preconsumer Versus Postconsumer Recovered Materials

Preconsumer recovered materials are often easier to incorporate into production processes than postconsumer recovered materials because they tend to be more uniform and contain less contamination. EPA, however, specifies procuring items containing postconsumer recovered materials because one of the RCRA section 6002(e) criteria for designating items is the potential impact of the procurement of an item on the solid waste stream. The Agency believes that recommending postconsumer recovered materials content levels for these items will have the most positive impact on reducing the amount of solid waste requiring disposal.

For several items, EPA recommends two-part content levels — a postconsumer recovered materials component and a total recovered materials component. In these instances, EPA found that both types of materials were being used to manufacture a product. Recommending only postconsumer content levels would fail to acknowledge the contribution to solid waste management made by manufacturers using other manufacturers' byproducts or scraps as feedstock.

This document contains discussions and recommendations on the recovered materials content levels and postconsumer materials content levels at which the designated items are

generally available. The terms "postconsumer materials" and "recovered materials" are defined at 40 CFR 247.3. These definitions are included here for the convenience of the reader.

Postconsumer materials means a material or finished product that has served its intended end use and has been diverted or recovered from waste destined for disposal, having completed its life as a consumer item. Postconsumer material is part of the broader category of recovered materials.

Recovered materials means waste materials and byproducts which have been recovered or diverted from solid waste, but such term does not include those materials and byproducts generated from, and commonly used within the original manufacturing process.

D. Recommending One-Hundred Percent Recovered Materials Content Levels

As discussed above, EPA recommends 100 percent recovered materials for some items. The RCRA definition of recovered materials, however, excludes internally generated scrap. The RCRA definition might be construed to suggest that no manufacturer can claim that its product contains 100 percent recovered materials since all manufacturers use some internally generated scrap as feedstock. EPA does not support this interpretation.

There are two types of internally generated scrap (also known as manufacturer's scrap): scrap generated in a manufacturing process using only virgin materials and scrap generated in a manufacturing process using recovered materials as feedstock. EPA believes that scrap generated in a process using recovered materials as feedstock should be considered differently from scrap generated in a manufacturing process using only virgin material feedstocks. The Agency allows scrap to be counted as recovered materials to the extent that the feedstock contains materials that would qualify as recovered materials. Otherwise, there is an illogical and unnecessary obstacle to the manufacture of products using high levels of recovered materials. A manufacturer using 100 percent recovered materials should be able to certify that its product contains 100 percent recovered materials.

E. Calculation of Product Content for Purposes of Certification

RCRA section 6002(i)(2)(C) requires the affirmative procurement program to include procedures for estimating, certifying, and, where appropriate, reasonably verifying the amount of recovered materials content utilized in the performance of a contract. In addition, RCRA section 6002(c) requires contracting officers to obtain from vendors a certification "that the

percentage of recovered materials to be used in the performance of the contract will be at least the amount required by applicable specifications or other contractual requirements." The Federal Acquisition Streamlining Act (Pub. L. 103-355) amended RCRA section 6002(c) to require estimates only for contracts in amounts greater than \$100,000.

Because each product is different, EPA recommends that procuring agencies discuss certification with product vendors to ascertain the appropriate period for certifying recovered materials content. EPA recommends that consistent with federal procurement law requirements, whenever feasible, the recovered materials content of a product be certified on a batch-by-batch basis or as an average over a calendar quarter or some other appropriate averaging period as determined by the procuring agencies.

F. RMAN Recommendations for Items Proposed for Designation in CPG II

Specific recommendations are made in RMAN II for items being proposed for designation in CPG II. Sections IV through IX of this document discuss the Agency's recommended recovered materials content levels for the 13 new items and provides clarification of its recommendations with respect to floor tiles containing recovered materials. The items are arranged as follows in the appropriate designation category:

Construction Products

- Shower and Restroom Dividers
- Latex Paint
- Floor Tiles

Transportation Products

- Parking Stops
- Channelizers
- Delineators
- Flexible Delineators

Park and Recreation Products

- Snow fencing

Landscaping Products

- Garden and Soaker Hoses
- Lawn and Garden Edging

Non-Paper Office Products

Printer Ribbons
Ink Jet Cartridges
Plastic Envelopes

Miscellaneous Products

Pallets

IV. RECOMMENDATIONS FOR CONSTRUCTION PRODUCTS

Part C of RMAN II includes EPA's recommendations for the following construction products: shower and restroom dividers and latex paint, and provides revised recommendations for floor tile, which was designated in the May 1, 1995 CPG. This section of the background document discusses the results of EPA's research on recovered materials content levels for these construction products and presents the Agency's recommendations for procuring these items.

A. Shower and Restroom Dividers***1. Background***

Shower and restroom dividers are panels used to separate individual shower, toilet, and urinal compartments in commercial and institutional facilities. Dividers are available in various styles, from simple panels to customized enclosures and are generally made to order, according to size, color, and style. They are generally 1-inch thick, which is the industry standard. Styles include: floor-anchored, floor-anchored and overhead-braced, ceiling-hung, floor and ceiling supported, and wall-hung.

Shower and restroom dividers generally are made of plastic or steel. Some plastic dividers are made with a fiberboard, plywood, particleboard, or phenolic core with a plastic laminate finish, while others are solid extruded or compression molded plastic. Steel dividers generally have a honeycomb kraft paper center. Other materials, such as wood, may be used for some applications, but EPA has not identified any manufacturers or government or private users of wooden dividers.

EPA identified 21 manufacturers and vendors of steel shower and restroom dividers. EPA believes there are many more, however, because steel product manufacturers produce steel dividers along with many other products. According to the Steel Recycling Institute, all steel products contain either 27 to 30 percent recovered material or virtually 100 percent

recovered content when made with North American steel, depending on whether the steel is produced in basic-oxygen furnaces (27 to 30 percent) or electric arc furnaces (100 percent). In addition, all steel contains at least 10 to 15 percent postconsumer content.

EPA identified nine manufacturers producing shower and restroom dividers made of recovered plastics, with recovered content ranging from 20 to 100 percent. Eight of these manufacturers use recovered HDPE, and one uses 100 percent postconsumer mixed plastics, including HDPE, LDPE, and PP.

Table 2 presents information provided by manufacturers of shower and restroom dividers on recycled content availability.

Table 2
Recovered Materials Content of Shower/Restroom Dividers

Product	Material	Postconsumer content (%)	Total recovered materials content (%)
Shower/Restroom dividers	Steel	Industry Standard: 10-15	27-100
	HDPE	Company A: Unknown	30-75
		Company B: Unknown	80
		Company C: 100	100
		Company D: 60-75	85
		Company E: 100	100
		Company F: 20-50	50
		Company G: 30	90
		Company H: 20	up to 90
HDPE,LDPE, PP	Company I: 100	100	

2. Specifications

The American Institute of Architects (AIA) has issued guidance for specifying construction materials, including plastic and steel dividers, in construction contracts. The AIA guidance is known throughout the construction industry as the "Masterspec." GSA distributes the Masterspec as guidance to its regional and headquarter offices for procuring both steel and plastic dividers as part of construction contracts. Some GSA locations use it or a modified version of it, and some do not use it. Neither AIA or GSA requires or precludes the use of recovered materials in these items. The Masterspec identifies three types of plastic dividers: 1)

plastic laminate finish, 2) solid plastic, homogenous color; and 3) solid plastic, melamine facing. The guidance specifies two types of steel dividers: 1) baked enamel finish and 2) stainless steel.

The U.S. Army Corps of Engineers' Guide Specification CEGS-10160, "Toilet Partitions," includes descriptions for plastic and plastic laminated shower and restroom dividers. The most current version of this specification, dated August 1994, neither excludes nor encourages the use of recovered materials. EPA is requesting information about any other specifications that are relevant to the use of recovered materials in shower and restroom dividers.

3. Preference Program

EPA recommends that, based on the recovered materials content levels shown in Table 3, procuring agencies establish minimum content standards for use in purchasing shower and restroom dividers.

Table 3
Recommended Recovered Materials Content Levels
for Shower and Restroom Dividers Containing Recovered Plastic or Steel

Product	Material	Postconsumer content (%)	Total recovered materials content (%)
Shower/Restroom Dividers	Steel	10 - 15	27 - 100
	Plastic	20 - 100	20 - 100

Note: EPA's recommendation does not preclude procuring agencies from purchasing shower and restroom dividers manufactured from another material, such as wood. It simply recommends that a procuring agency, when purchasing shower and restroom dividers made from plastic or steel, purchase these items made with recovered materials when these items meet applicable specifications and performance requirements.

B. Latex Paint

1. Background

Latex (water-based) paint is widely used for architectural purposes for residential and commercial buildings. Latex paint is also used for land-based vehicles, equipment, and machinery; marine and air crafts; furniture; traffic marking; and other special purposes, such as swimming pools and blackboards, however, EPA has limited information on recycled-content paint used in these applications and requests additional information in this regard. It is available in many colors and in semigloss, eggshell, flat, satin, and high gloss finishes for interior and exterior applications.

As defined in Executive Order 12873, "postconsumer material" means a material or finished product that has served its intended use and has been discarded for disposal or recovery, having completed its life as a consumer item. For the purposes of this RMAN, postconsumer latex paint, therefore, is latex paint that, after being purchased for use by an end user (such as a homeowner or a painting contractor), is left over, excess, or otherwise unused as intended, and is collected for recycling.

RCRA defines recovered materials as "waste materials and byproducts which have been recovered or diverted from solid waste, but such term does not include those materials and byproducts generated from, and commonly reused within, an original manufacturing process." Recovered latex paint, therefore, includes paint that is mis-tinted, out-of-date, or otherwise not sold to a consumer, which is returned by a distributor, retailer, or contractor to the manufacturer or to a paint recycler. Off-specification paint generated in the paint manufacturing process that is reblended by the manufacturer, and waste water from paint manufacturing or paint reprocessing operations, are not to be counted toward total recovered materials content in recycled latex paint.

"Paint recyclers" handle left-over latex paint in one of two ways, each of which produces a different end product. The first, paint recycling (reprocessing), produces consistent characteristics in recycled latex paint that are comparable to virgin latex paint used for exterior and interior architectural applications. The second type, paint consolidation, involves blending postconsumer paint, resulting in a mixture that contains 100 percent postconsumer content with characteristics that vary significantly from batch to batch. Consolidated paint is used in limited exterior applications, such as graffiti abatement, and is normally given away by the recycler.

EPA is aware of at least seven manufacturers producing "reprocessed" recycled latex paint with postconsumer content ranging from 50 to 99 percent. EPA believes that some data provided by reproprocessors as postconsumer may actually be recovered materials as defined in this RMAN and the Agency requests further information on the postconsumer content in paint. In addition, EPA believes that the content levels represent a limited range of colors, such as gray, brown, and other earthtones and generally do not include white and other light colors. Reprocessed paint is available nationwide through GSA and direct from manufacturers. Most reproprocessors sell regionally because long distance shipping imposes high freight costs. Several paint reproprocessors indicate an interest in establishing "closed loop" arrangements with municipalities for reprocessed paint made from collected postconsumer paint. Most latex paint is purchased by Federal agencies at local retail paint stores. Table 4 presents information provided by paint latex paint reproprocessors:

Table 4
Recovered Materials Content of Reprocessed Latex Paint

Product	Material	Postconsumer Content %
Reprocessed latex paint	Left-over latex paint	Company A: 90 - 98 Company B: 50 - 80 Company C: 50 - 90 Company D: 50 - 60 Company E: 90+ Company F: 60 - 80 Company G: 90 - 99

2. Specifications

GSA specification TT-P-2846 covers three types of latex paint (interior, exterior, and interior/exterior), three classes (flat, eggshell, and semigloss) and three grades (A: 40 percent minimum volume solids, B: 30 percent minimum volume solids, and C: utility paint for graffiti abatement). GSA requires 50 percent postconsumer content for Grades A and B and 90 percent postconsumer content for Grade C. GSA has two types of recycled paint on schedule: GSA Class 1 (flat) paint in 10 colors and Class 3 (semigloss) paint in 13 colors. GSA's specification for all grades of recycled latex paint also contains requirements for freeze-thaw stability, application properties, odor, dry time, consistency, volatile organic compound (VOC) content, and contrast ratio. For Grades A and B, the specification sets additional requirements for alkali

resistance, flexibility, scrub resistance, biological growth, total solids, fineness of dispersion, and gloss. EPA notes, however, that the color selection may be limited at the 50 percent postconsumer-content level.

According to information available to EPA, GSA specifications do not have composition requirements. Agencies are therefore unable to specify a specific type of latex paint such as acrylic latex, vinyl latex, or modified acrylic latex. EPA requests additional information on this issue. EPA also requests information on additional specifications pertaining to recycled latex paint.

3. Preference Program

EPA recommends that, based on the recovered materials content levels shown in Table 5, procuring agencies establish minimum content standards for use in purchasing latex paint. EPA recommends the use of consolidated paint for limited applications, such as graffiti abatement, where color and consistency of performance are not primary concerns. The Agency recommends the use of reprocessed paint for interior and exterior architectural applications.

Table 5
Recommended Recovered Materials Content Levels for Latex Paint

Product	Material	Postconsumer Content %
Consolidated Latex Paint	Left-over latex paint	100
Reprocessed Latex Paint	Left-over latex paint	50 - 99*

* Based on comments received from its interagency workgroup, EPA believes that the content levels recommended in this table may represent a limited range of colors, such as gray, brown, and other earthtones, and requests comments on the availability of paint with postconsumer content in white and lighter colors.

C. Floor Tiles

1. Background

In the May 1, 1995 CPG, EPA designated floor tiles and patio blocks containing recovered rubber or plastic (40 CFR 247.12(e)). In the May 1, 1995 RMAN, EPA

recommended that procuring agencies purchase floor tiles with specified minimum recovered rubber or plastic content for “heavy duty/commercial type” applications only. EPA limited the recommended applications to heavy-duty/commercial-type uses because, at the time the CPG was issued, the Agency was not aware of any manufacturers that made floor tile with recovered materials for standard office flooring. Therefore, the Agency elected to broadly designate floor tiles and limit its initial recommendations to heavy-duty/commercial type uses.

2. Specifications

Since publication of the RMAN, several floor tile manufacturers contested EPA’s use of the term “heavy-duty, commercial-type” to describe the recommended applications to which the floor tile designation applies. In addition, manufacturers were concerned about the ability of “heavy-duty, commercial type” floor tiles recommended by EPA to meet applicable American Society for Testing and Materials (ASTM) and federal government performance standards for these products.

Regarding the ability of floor tiles to meet applicable American Society for Testing and Materials (ASTM) and federal government performance standards for these products, EPA has specifically noted that available tiles with recovered materials content do not meet these standards. As a result, the Agency is plainly not recommending that procuring agencies purchase recovered materials content floor tile or establish an affirmative procurement program where its use is not appropriate under the criteria set forth in RCRA section 6002 (c)(1) (e.g., fails to meet performance standards for a particular use, is not available at a reasonable, is not available within a reasonable period of time, is not available from an adequate number of sources).

3. Preference Program

In the May 1, 1995 RMAN, EPA recommended that procuring agencies establish minimum content standards for floor tiles made from rubber (90-100 percent postconsumer content) and plastic (90-100 percent total recovered materials). (See 60 FR 21392.) EPA recommended these content levels for “heavy duty/commercial” tile uses because there were no published industry-wide definitions to describe the applications to which the recovered materials requirements of the CPG should be applied. In the supporting analysis for the May 1, 1995 RMAN, EPA explained what it meant by “heavy-duty, commercial-type applications.” There, the Agency described, in general terms, a number of commercial and industrial settings where the use of such tiles with recovered materials content would be appropriate. These

would include, for example, entranceways in airports and stores, furniture showrooms, skating rinks and fitness centers. EPA has learned that this discussion may have caused some confusion. Some procuring agencies may have confused EPA's description of the areas where, given special circumstances, such tiles might be appropriate, with an EPA recommendation that such tile should always be used in such settings. This was not the Agency's intention. Therefore, the Agency is clarifying that the use of these tiles might be appropriate only for specialty purpose uses at such locations (e.g., raised, open-web tiles for drainage on school kitchen flooring). Such specialty purpose uses involve limited flooring areas where grease, tar, snow, ice, wetness or similar substances or conditions are likely to be present. Thus, EPA is currently not recommending floor tile made with recovered materials for standard office or more general purpose uses. However, in the draft RMAN, the Agency requests additional information on floor tile made with recovered materials in standard office flooring.

EPA recommends that, based on the recovered materials content levels shown in Table 6, procuring agencies establish minimum content standards for use in floor tile. The recommended use of floor tiles containing recovered materials is limited to the applications cited in the table. The Agency requests additional information on floor tiles made with recovered materials in other applications such as standard office flooring.

Table 6
Recommended Recovered Materials Content Levels
for Floor Tiles Containing Recovered Plastic or Rubber*

Product	Material	Postconsumer content (%)	Total recovered materials content (%)
Floor Tiles (heavy duty/commercial use)*	Rubber	90-100	--
	Plastic	--	90-100

*The use of floor tiles with recovered materials content may be appropriate only for specialty purpose uses (e.g., raised, open-web tiles for drainage on school kitchen flooring). Such specialty purpose uses involve limited flooring areas where grease, tar, snow, ice, wetness or similar substances or conditions are likely to be present. Thus, EPA is currently not recommending floor tile made with recovered materials for standard office or more general purpose uses.

NOTE: The recommended recovered materials content levels are based on dry weight of the raw materials, exclusive of any additives such as adhesives, binders, or coloring agent. EPA's recommendation does not preclude agencies from purchasing floor tiles manufactured from other materials. It simply recommends that procuring agencies, when purchasing floor tiles made from rubber or plastic, purchase these items made from recovered materials when these items meet applicable specifications and performance requirements.

V. RECOMMENDATIONS FOR TRANSPORTATION PRODUCTS

Part D of RMAN II includes EPA's recommendations for parking stops and three additional temporary traffic control devices: channelizers, delineators, and flexible delineators. This section of the background document discusses the results of EPA's research on recovered materials content levels for these transportation products and presents the Agency's recommendations for procuring these items.

A. Parking Stops

1. Background

Parking stops are used to mark parking spaces and to keep parked vehicles from rolling beyond a designated parking area. The stops are usually 6 feet long and 4 to 6 inches wide and deep. Two widely spaced vertical holes accommodate pin fasteners that hold the stop to the parking surface. Traditional stops are made of concrete and weigh between 250 and 300 pounds. Most concrete stops are made from concrete left over from other construction-related jobs. The material is poured into a mold, left to harden, and sold. Other concrete stops are more complex, with internal support structures, but these types are not the industry standard.

While most parking stops are made from concrete, parking stops are available made from recovered plastics or rubber. They weigh approximately 30 pounds and are the same dimensions as concrete stops. Many stops are reinforced with metal bars. Most stops are molded products, but one manufacturer can cut longer stops on site to fit the exact dimensions of the parking space. EPA identified 55 manufacturers of parking stops containing postconsumer and other recovered plastics, and postconsumer rubber from scrap tires. Three of these manufacturers also use sawdust and/or woodchips to make a composite parking stop. One additional manufacturer uses fiberglass in combination with plastic.

Table 7 provides information on the availability of parking stops made of recovered plastics and rubber.

Table 7
Recovered Materials Content of Parking Stops

Product	Material	Postconsumer content (%)	Total recovered materials content (%)
Parking stops	HDPE	Company 1: 100 Company 2: 100 Company 3: 100 Company 4: 95 Company 5: 90	100 100 100 100 100
	Unknown plastic and rubber	Company 6: 100 Company 7: 100 Company 8: 80	100 100 80
	Rubber	Company 9: 100 Company 10: 66 Company 11: 100	100 66 100
	MDPE	Company 12: unknown	10 -100
	PE	Company 13: 100	100
	LDPE, HDPE, LLDPE, PP	Company 14: 90 - 95 Company 15: 90 - 95	100 100
	LLDPE, PP	Company 16: 15 (LLDPE)	100 (85 PE)
	LDPE, nylon, and vinyl	Company 17: 50 (LDPE), 25 (nylon and vinyl)	100
	HDPE, PP	Company 18: 100	100
	HDPE, PP, PET	Company 19: 100	100
	LDPE, HDPE, PP, PET, PS	Company 20: up to 100	up to 100
	LDPE, HDPE, PET, PE	Company 21: 97	100
	LDPE, HDPE, PP, PET	Company 22: 97	97
	LDPE, HDPE	Company 23: Unknown	100
	PP, PS, PE	Company 24: 10 - 60	100

Product	Material	Postconsumer content (%)	Total recovered materials content (%)
	Unknown plastics	Company 25: 100	100
		Company 26: 95	100
		Company 27: 100	100
		Company 28: 50	100
		Company 29: 50	100
		Company 30: 100	100
		Company 31: 100	100
		Company 32: up to 60	100
		Company 33: 40 - 60	100
		Company 34: 100	100
		Company 35: 100	100
		Company 36: 100	100
		Company 37: 90	100
		Company 38:	100
		Unknown	
		Company 39: 100	100
		Company 40: 100	100
		Company 41: 100	100
		Company 42: 30 - 50	40 - 60
		Company 43: 100	100
		Company 44: 30 - 70	30 - 70
		Company 45: 100	100
		Company 46:	100
		Unknown	
		Company 47: 30 - 35	100
		Company 48: 40 - 70	40 - 70
		Company 49: 100	100
		Company 50: 100	100
		Company 51: 50	100
	Unknown plastics and wood and sawdust	Company 52: 50+	100
	LDPE and sawdust	Company 53: 50 (LDPE)	100
		Company 54:	100
		Unknown	
	LDPE and sawdust and woodchips	Company 55: 50 (LDPE)	100
	Fiberglass and HDPE	Company 56: 75 (HDPE)	95

2. Specifications

EPA identified no specifications or standards that either require or preclude the use of recovered materials in parking stops. The only material requirement identified is that some uses may require parking stops to be a specific color. Blue, for example, is becoming popular for handicapped-space parking stops, but there is no official standard for the color.

3. Preference Program

While most parking stops are made of concrete and EPA previously designated concrete containing coal fly ash or ground granulated blast furnace (GGBF) slag, EPA identified no manufacturers of concrete parking stops containing these materials. EPA requests information on the use of recovered material-concrete for parking stops. EPA recommends that, based on the recovered materials content ranges shown in Table 8, procuring agencies establish minimum content standards for use when purchasing parking stops.

Table 8
Recommended Materials Content Levels for Parking Stops Made From Concrete or
Containing Recovered Plastic or Rubber

Product	Material	Postconsumer content (%)
Parking stops	Plastic* and/or rubber	100
	Concrete containing fly ash or GGBF	**

* Parking stops made with recovered plastics may also include other recovered materials such as sawdust, wood, or fiberglass. The percentage of these materials contained in the product would also count toward the recovered materials content level of the item.

** See recommendations for cement and concrete containing recovered materials issued in Section C-3 of the May 1, 1995 RMAN (59 FR 21390).

Note: EPA's recommendation does not preclude a procuring agency from purchasing parking stops manufactured from another material. It simply requires that a procuring agency, when purchasing parking stops made from rubber, plastic, or concrete, purchase these items made with recovered materials when these items meet applicable specifications and performance requirements.

B. Temporary Traffic Control Devices

In Part D-1 of the May 1995 RMAN, EPA recommended recovered-materials content levels for traffic cones and traffic barricades (Types I and II). This section of the background document discusses the results of EPA's research on recovered materials content levels for additional temporary traffic control products proposed for designation in CPG II and presents the Agency's recommendations for procuring those items. Items discussed include channelizers, delineators, and flexible delineators.

1. Background

Channelizers, delineators, and flexible delineators are types of temporary traffic control devices used to divert or streamline traffic flow in a variety of applications. Channelizers are barrels or drums used to direct traffic around areas of road construction and repair.

Channelizers are barrels or drums which can be made from postconsumer plastic resins; the weighted base is made from postconsumer rubber. EPA obtained information from three companies that make channelizers from recovered materials. Delineators are tubular pavement markers that come in many shapes, sizes, and compositions. The top portion of the delineator can be manufactured from postconsumer plastics. Delineator bases are either steel stakes that can be driven into the ground, or made from recovered postconsumer rubber to support the delineator on the road surface. EPA obtained information on eight manufacturers of delineators. Flexible delineators allow vehicles to strike them without causing damage to the vehicle or the delineator. EPA identified three companies that manufacture flexible delineators from recovered PE, PE and polycarbonate, and PP. Table 9 shows the information EPA obtained on the recovered materials content of channelizers, delineators, and flexible delineators.

Table 9
Recovered Materials Content of Channelizers, Delineators, and Flexible Delineators
(Temporary Traffic Control Devices)

Product	Material	Postconsumer content (%)	Total recovered materials content (%)
Channelizers	PET/rubber base	Company A: 25/100	25/100
	Unspecified plastics	Company B: 95 Company C: unknown	95 unknown
Delineators	Rubber (base only)	Company D: 100 Company E: 100 Company F: 100	100 100 100
	HDPE/Rubber base	Company G: 90/100	90/100
	PP/Steel stake	Company H: 25/50	25/50
	Plastics/Rubber base	Company I: 50/100	50/100
	Unknown	Company J: 50 Company K: unknown	70 unknown
Flexible Delineators	PE and polycarbonate	Company L: 51-85	51-85
	PE	Company M: 5	5
	PP	Company N: 25	75

2. Specifications

The *Manual on Uniform Traffic Control Devices*, published by the Federal Highway Administration, contains specifications used by most states for the size, shape, mounting, and placement of temporary traffic control devices.

Two states have specifications that require the use of recovered materials in their flexible delineators:

- Florida: Flexible delineator material shall be made of at least 51 percent postconsumer commingled recycled plastic from Florida which will withstand multiple impacts by full size vehicles and return to a functional delineator position. The material shall be ultraviolet (UV) stabilized and inert to all

normal atmospheric elements. The post must survive three impacts occurring 35 miles per hour.

- North Carolina: The flexible delineator post shall be of a flexible, recycled and/or recyclable material which shall be resistant to impact, UV light, ozone, and hydrocarbons, and shall resist stiffening with age. The post must survive 10 impacts occurring at 35 miles per hour.

Local governments in California uses specifications for delineator posts that are approved by the California Department of Transportation (CALTRANS). CALTRANS tests all delineator posts according to its specification for *Drivable Flexible Plastic Guide Marker and Clearance Marker Posts*. At least three types of CALTRANS approved delineators contain recovered plastic. CALTRANS specifications require that the delineators be resistant to impact, UV light, ozone and hydrocarbons. CALTRANS also specifies width, length, base anchoring, color, heat and cold resistance and color fastness. At specified temperatures and angles, posts must withstand 10 impacts at 35 miles per hour and 5 impacts at 55 miles per hour.

3. Preference Program

EPA recommends that, based on the recovered materials content levels shown in Table 10, procuring agencies establish minimum content standards for use in purchasing channelizers, delineators, and flexible delineators.

Table 10
Recommended Recovered Materials Content Levels for Channelizers, Delineators, and Flexible Delineators Containing Recovered Plastic, Rubber, or Steel

Product	Material	Postconsumer content (%)
Channelizers	Plastic	25 - 95
	Rubber base only	100
Delineators	Plastic	25 - 90
	Rubber (base only)	100
	Steel (base only)	25 - 50
Flexible Delineators	Plastic	25 - 85

Note: EPA's recommendation does not preclude a procuring agency from purchasing temporary traffic control devices manufactured from another material. It simply requires that a procuring agency, when purchasing channelizers, delineators, and flexible delineators made from rubber, plastic, or steel, purchase these items made with recovered materials when these items meet applicable specifications and performance requirements.

VI. RECOMMENDATIONS FOR PARK AND RECREATION PRODUCTS

Part E of RMAN II includes EPA's recommendations for snow fencing. This section of the background document discusses the results of EPA's research on recovered materials content levels for this product and presents the Agency's recommendations for procuring these items.

A. Snow Fencing

1. Background

Snow fencing is used to control drifting snow by restricting the force of wind. Fencing is constructed from plastics in an open-weave pattern or from wood slats held together with wire strands. Snow fencing also is used to delineate construction areas and protect sand dunes.

EPA has no information on the recovered material content of wood snow fencing and requests such information. Snow fencing made with both recovered and postconsumer plastic is sold in 4 foot high rolls 50 to 100 feet in length. EPA obtained information from three manufacturers of snow fencing containing recovered HDPE. Table 11 presents information provided by manufacturers on the recovered materials content of snow fencing.

Table 11
Recovered Materials Content of Snow Fencing

Product	Material	Postconsumer content (%)	Total recovered materials content (%)
Snow fencing	HDPE	Company A: 60 Company B: 100 Company C: up to 90	97 100 up to 90

2. Specifications

New York and New Jersey developed specifications for recovered content snow fencing, although neither specification remains in effect because neither state purchased sufficient quantities of snow fencing to justify maintaining the specifications. EPA found no other specifications or standards for snow fencing.

New York required an orange-colored snow fencing 4 feet high and 100 feet long. Weight was specified at 48 pounds per 100-foot section, with porosity at 50 percent. Temperature tolerance ranged from -50 to +180°F. Strength specifications required a machine direction breaking load of 1,210 pounds per foot-width and a transverse direction breaking load of 340 pounds per foot-width.

New Jersey required orange, UV-stabilized fencing with a minimum tensile strength of 3190 PSI (horizontal) and 3840 PSI (vertical), as measured by ASTM test D638, and ultimate tensile strength of 220 PSI (horizontal) and 2660 PSI (vertical).

3. Preference Program

EPA recommends that, based on the recovered materials content levels shown in Table 12, procuring agencies establish minimum content standards for use in purchasing snow fencing.

Table 12
Recommended Recovered Materials Content Levels for Snow Fencing
Containing Recovered Plastic

Product	Material	Postconsumer content (%)	Total recovered materials content (%)
Snow fencing	Plastic	60-100	90-100

Note: EPA's recommendation does not preclude procuring agencies from purchasing snow fencing manufactured from another material, such as wood. It simply requires that a procuring agency, when purchasing snow fencing made from plastic, purchase this item with recovered materials when this item meets applicable specifications and performance requirements.

VII. RECOMMENDATIONS FOR LANDSCAPING PRODUCTS

Part F of RMAN II includes EPA's recommendations for garden and soaker hoses and lawn and garden edging. This section of the background document discusses the results of EPA's research on recovered materials content levels for these landscaping products and presents the Agency's recommendations for procuring these items.

A. Garden and Soaker Hose

1. Background

Hoses for landscaping applications are usually manufactured with rubber or PVC plastic. It comes in two different types: garden hose and soaker hose. Garden hoses are flexible tubing that conducts water above ground to a specific location. The product is usually made from polyvinyl chloride (PVC) or rubber. Soaker hoses, which generally are made of rubber, are a perforated flexible tubing that is used to deliver gentle irrigation to plants.

EPA identified five manufacturers, two of which manufacture both garden and soaker hoses, two that manufacture only garden hoses, and one that manufactures only soaker hoses. All manufacturers who supplied information manufactured garden and soaker hoses with at least 60 percent recovered materials. Garden hoses are available with between 60 and 65 percent postconsumer content and soaker hoses are available with 60 to 70 percent postconsumer content. Table 13 presents information provided by manufacturers on the recovered materials content of garden and soaker hoses.

Table 13
Recovered Materials Content Levels of Hose (Garden and Soaker)

Product	Material	Postconsumer content (%)	Total recovered materials content (%)
Garden Hose	Rubber and PVC plastic	Company A: 60	60
	Rubber	Company B: 65	65
	PVC plastic	Company C: unknown	65
	PVC plastic and Rubber	Company D: unknown	unknown
Soaker Hose	Rubber	Company B: 65	65
		Company E: 60 - 70	60 - 70
	PVC plastic and Rubber	Company D: unknown	unknown

2. Specifications

EPA identified two standards for garden and soaker hoses:

- ASTM D3901: *Consumer Specification for Garden Hose*. The specification addresses physical and performance characteristics (pressure, tensile, and ripping strength tests) and states that the material components are to be agreed upon by the purchaser and seller.
- Green Seal GC-2: *Watering Hoses*. The standard calls for the use of 50 percent postconsumer rubber material in garden hoses and 65 percent postconsumer rubber material in soaker hoses.

As a service to manufacturers, Scientific Certification Systems, an independent certification organization, tests rubber hose and certifies the amount of recovered rubber it contains.

3. Preference Program

EPA recommends that, based on the recovered materials content levels shown in Table 14, procuring agencies establish minimum content standards for use in purchasing garden and soaker hose.

Table 14
Recommended Recovered Materials Content Levels for Garden and Soaker Hoses
Containing Recovered Plastic or Rubber

Product	Material	Postconsumer content (%)
Garden Hose	Rubber and/or plastic	60-65
Soaker Hose	Rubber and/or plastic	60-70

Note 1: EPA's recommendation does not preclude a procuring agency from purchasing garden and soaker hoses manufactured from another material. It simply requires that a procuring agency, when purchasing garden and soaker hoses made from plastic or rubber, purchase these items made with recovered materials when these items meet applicable specifications and performance requirements.

Note 2: While Green Seal's specification includes a 50 percent postconsumer content level for watering hoses, all companies from which EPA obtained information, manufacture garden and/or soaker hoses with at least 60 percent postconsumer content.

B. Lawn and Garden Edging

1. Background

Lawn and garden edging is used to provide a barrier between lawns and landscaped areas or garden beds. Strips of edging are set into the ground to prevent grass roots or weeds from spreading to the landscaped areas. Edging is sold in rolls of varying lengths or in long pieces and is approximately 4 to 8 inches high, with a rolled bead along the top portion. It is made from recovered HDPE and mixed plastic. The edging is made in both commercial and residential strengths. Commercial edging is stronger and more durable than residential edging.

EPA identified seven manufacturers of lawn and garden edging that produce edging with between 30 and 100 percent postconsumer HDPE or a combination of rubber and HDPE. Table 15 provides information on the availability of lawn and garden edging made with recovered materials.

Table 15
Recovered Materials Content of Lawn and Garden Edging

Product	Material	Postconsumer content (%)	Total recovered materials content (%)
Lawn and garden edging	HDPE	Company A: 100	100
		Company B: 70 - 100	70 - 100
		Company C: n/a	100
		Company D: 30	30
	Unspecified plastics	Company E: 90 - 95	100
	Unspecified plastics	Company F: 30 - 70	30 - 70
	Rubber and/or plastics	Company G: up to 100	up to 100

2. Specifications

EPA is not aware of any performance specifications for lawn and garden edging and requests information on this topic.

3. Preference Program

EPA recommends that, based on the recovered materials content levels shown in Table 16, procuring agencies establish minimum content standards for use in purchasing lawn and garden edging.

Table 16
Recommended Recovered Materials Content Levels for Lawn and Garden Edging
Containing Recovered Plastic or Rubber

Product	Material	Postconsumer content (%)	Total recovered materials content (%)
Lawn and garden edging	Plastic and/or rubber	30-100	30-100

Note: EPA's recommendation does not preclude procuring agencies from purchasing lawn and garden edging manufactured from another material, such as wood. It simply requires that a procuring agency, when purchasing lawn and garden edging made from plastic and/or rubber, purchase these items made with recovered materials when these items meet applicable specifications and performance requirements.

VIII. RECOMMENDATIONS FOR NON-PAPER OFFICE PRODUCTS

Part G of RMAN II includes EPA's recommendations for non-paper office products. This section of the background document discusses the results of EPA's research on recovered materials content levels for printer ribbons, ink jet cartridges, and plastic envelopes.

A. Printer Ribbons

1. Background

Fabric printer ribbons are used in dot matrix and other types of impact printers. They also are used to print hard copy receipts for retail purchases and bank automatic teller machines. Printer cartridges consist of an outer plastic casing (cartridge), a ribbon, and internal gears. The ribbon is made of nylon fabric and contains ink that clings to the weave of the fabric. The ink is transferred to paper when the printer's print head hits the ribbon, similar to a typewriter. The nylon, a petrochemical product, is nonabsorbent, so the ink simply sits in the spaces of the fabric's weave.

Once a fabric ribbon runs out of ink, the cartridge can be reloaded with a new ribbon (also referred to as restuffed or remanufactured) or the old ribbon can be reinked. The reinking process uses electromagnetic machinery to apply new ink to the existing ribbon. Ribbons are reinked until they reach the end of their useful life and begin to fall apart.

Both reinked and reloaded printer ribbons are available as new introductory schedule items from GSA. EPA identified 18 companies that service customers nationwide and is aware that seven of these are reinkers and five are reloaders.

2. Specifications

EPA did not identify any national specifications for reinked printer ribbons. The State of Alabama has a specification for reinked ribbons which requires the ribbons to be vacuum cleaned, reinked, and rewound to proper tension. A copy of this specification is available from the RCRA Hotline at 1-800-424-9346.

3. Preference Program

Minimum content standards are not appropriate for remanufactured items, such as reinked or reloaded printer ribbons, because a core part of the item is reused in the new product, even though certain components of a printer ribbon may contain recovered materials.

In lieu of minimum content standards, EPA recommends that procuring agencies adopt one or both of the following approaches: (1) procure printer ribbon reinking or reloading services or (2) procure reinked or reloaded printer ribbons. EPA further recommends that procuring agencies establish policies that give priority to reinking or reloading their expended printer ribbons. If reinking and reloading services are unavailable, procuring agencies should attempt to purchase reinked or reloaded printer ribbons.

B. Ink Jet Cartridges

1. Background

Ink jet cartridges are used in ink jet printers and in some types of facsimile machines and plotters. Ink jet plain-paper facsimile machines are relatively new on the market, but are growing in market share in relation to plain paper facsimile machines with laser cartridges and thermal paper facsimile machines.

Once an ink jet cartridge reaches the end of its life, the cartridge can be refilled with new ink and reused. Many users, however, currently dispose of spent cartridges because they are so small (comparable in size to a salt shaker) that users assume that the discard will not

affect the waste stream. EPA identified 24 companies that refill ink jet cartridges for customers nationwide.

2. Specifications

While EPA is not aware of any national specification for refilled ink jet cartridges, the Agency identified a number of procuring agencies that have purchased these items and have been generally pleased with their performance. For example, The Internal Revenue Service of South Florida has purchased the item for the past five years for use on the majority of the agency's ink jet printers and facsimile machines. The agency has experienced excellent performance from the refilled cartridges and recommends their use to other state agencies. A copy of the specification used by the IRS is available from the RCRA Hotline at 1-800-424-9346. GSA made ink jet cartridges available under the Multiple Award Schedule and the Special Item Number Schedule in 1995. Federal agencies purchased approximately \$781,000 worth of ink jet cartridges for facsimile machines in FY 1995.

3. Preference Program

Minimum content standards are not appropriate for remanufactured items, such as refilled ink jet cartridges, because a core part of the item is reused in the new product, even though certain components of an ink jet cartridge may contain recovered materials.

In lieu of minimum content standards, EPA recommends that procuring agencies adopt one or both of the following approaches: (1) procure ink jet cartridge refilling services or (2) procure refilled ink jet cartridges. EPA further recommends that procuring agencies establish policies that give priority to refilling their ink jet cartridges. If refilling services are unavailable or impractical, then procuring agencies should attempt to purchase refilled ink jet cartridges.

C. Plastic Envelopes

1. Background

Plastic envelopes are used in heavy-duty, security-related, and other specialized mailing applications. Plastic envelopes are used most commonly by the express mail, insurance, bank, legal, medical, and international mail industries. The envelopes are lightweight, tear-resistant, durable, and water-resistant. Due to their light weight, plastic envelopes require less postage, enabling them to compete directly with paper envelopes for traditional uses. Manufacturers of plastic envelopes offer a variety of standard sizes and styles and also make customized envelopes according to customer specifications.

There are two types of plastic envelopes currently on the market: Tyvek® envelopes and extruded envelopes. Tyvek® is a trademarked, patented, spunbonded olefin material manufactured by only one company. Tyvek® is formed by bonding together plastic fiber filaments using heat and pressure, giving the final envelope a look and feel very similar to paper. Tyvek® envelopes are made with HDPE, 25 percent of which is from postconsumer milk and water bottles.

Plastic envelopes other than Tyvek® are manufactured with HDPE and/or LDPE and are referred to as tri-extruded polyolefins or polyethylenes. These envelopes contain three layers of extruded plastic and have the appearance and texture of a thick plastic bag. The inside layer of the envelope makes it opaque, the core layer gives the envelope its strength, and the outside layer provides a printing surface. ERG identified two manufacturers of extruded plastic envelopes. Table 17 provides information on the availability of plastic envelopes manufactured from recovered materials.

Table 17
Recovered Materials Content of Plastic Envelopes

Product	Material	Postconsumer content (%)	Total recovered materials content (%)
Plastic envelopes	HDPE	Company A: minimum of 25 Company B: up to 25 (upon request)	minimum of 25 25
	HDPE and LDPE	Company C: 25	35

2. Specifications

The General Services Administration (GSA), Government Printing Office (GPO) and U.S. Postal Service (USPS) all currently purchase plastic envelopes made from Tyvek® containing recovered HDPE. GSA specifies "DuPont Tyvek® or equal." USPS requires "DuPont Tyvek®," and GPO requires "white spunbonded polyethylene with the characteristics of DuPont's product no. 1073." The title of the solicitation, however, states "Tyvek® envelopes or similar."

The U.S. Navy requests that plastic envelopes not be sent to ships in order to minimize onboard disposal of plastic.

3. Preference Program

EPA recommends that, based on the recovered materials content levels shown in Table 18, procuring agencies establish minimum content standards for use in purchasing plastic envelopes.

Table 18
Recommended Recovered Materials Content Levels for Plastic Envelopes

Product	Material	Postconsumer content (%)	Total recovered materials content (%)
Plastic envelopes	Plastic	25	25 - 35

Note: EPA's recommendation does not preclude a procuring agency from purchasing envelopes manufactured from another material, such as paper. It simply requires that a procuring agency, when purchasing envelopes made from plastic, purchase these items made from recovered materials when these items meet applicable specifications and performance requirements. When purchasing envelopes made from paper, procuring agencies should consult the Paper Products RMAN which was issued in the FEDERAL REGISTER on May 29, 1996 at 61 FR 26985.

IX. RECOMMENDATIONS FOR MISCELLANEOUS PRODUCTS

Part H of RMAN II includes EPA's recommendations for pallets. This section of the background document discusses the results of EPA's research on recovered materials content levels for this item.

A. Pallets

1. Background

Pallets are used for shipping a variety of products including food, paper, and military supplies. Pallets can be manufactured of wood, plastics such as HDPE, and old corrugated containers (OCC).

Wooden pallets can be repaired or rebuilt with wood from old pallets. The *National Wood Recycling Directory* lists 95 pallet recyclers. EPA obtained information from eight manufacturers of recovered-content wooden pallets, seven of which use between 95 to 100 percent postconsumer content. Approximately 80 percent of pallets received by recyclers in 1993 were multiple-use, 48 by 40-inch pallets similar to those typically used by the grocery

industry. Approximately 61 percent of the pallets received were repaired, 13 percent required no repair and were simply reused, and 15 percent were broken down into usable parts. Approximately 80 percent of these parts were used to rebuild pallets.

Plastic pallets are typically manufactured with postconsumer HDPE, although EPA identified one manufacturer that also uses recovered polycarbonate. They can be molded products or constructed from plastic lumber. The McDonald's Corporation's *McRecycle Database* lists 15 manufacturers of recycled content pallets made from molded HDPE, polyethylene, and unspecified plastics. EPA obtained information from 19 manufacturers of recovered-content plastic pallets, 15 with 100 percent postconsumer content.

Corrugated pallets containing recovered materials are manufactured from old corrugated containers (OCC). Recycled-content corrugated paperboard is produced in sheets, which are folded and glued to form pallets. EPA obtained information from two manufacturers of recycled-content pallets made from corrugated paperboard, both with 50 percent postconsumer content. Plastic and corrugated pallets together represent less than 5 percent of the pallet industry.

Table 19 provides information provided by manufacturers of pallets made with recovered materials.

Table 19
Recovered Materials Content of Pallets

Product	Material	Postconsumer content (%)	Total recovered materials content (%)
Wooden pallets	Wood	Company A: 100	100
		Company B: 95	95
		Company C: 95	95
		Company D: 100	100
		Company E: 95	95
		Company F: 40	40
		Company G: 100	100
		Company H: 100	100
Plastic pallets	HDPE and polycarbonate	Company I: Unknown	100
	HDPE	Company J: 100	100
		Company K: 100	100
		Company L: 50	50
		Company M: 100	100
		Company N: 25	25
		Company O: 90	90
		Company P: 100	100
		Company Q: 100	100
		Company R: 25	25
	Unknown plastic	Company S: 100	100
		Company T: 100	100
		Company U: 100	100
		Company V: 100	100
	LDPE	Company W: 100	100
	PE	Company X: 100	100
		Company Y: 100	100
		Company Z: 100	100
	PP, HDPE, PS	Company AA: 100	100
Corrugated pallets	OCC	Company BB: 50	50
		Company CC: 50	50

2. Specifications

Numerous design and performance specifications exist for new wood pallets. A widely used standard is that issued by the Grocery Manufacturers of America (GMA) for 48 by 40-inch stringer pallets (a stringer pallet is constructed with three continuous strips separating the pallet deck from the pallet bottom). Many purchasers refer to the "GMA spec" although many actually use a modified version of it.

EPA identified several activities currently underway to develop specifications for remanufactured pallets. The National Wooden Pallet and Container Association (NWPCA) is developing a standard through the American National Standards Institute (ANSI) for repairable 48 by 40 inch lumber-deck stringer and block pallets (a block pallet separates the pallet deck and bottom with evenly spaced rectangular, square or circular blocks). The ANSI standard is scheduled for release in Fall 1996 and addresses two categories of pallets: 1) limited-use pallets that can be used up to 10 trips before needing repairs and for which specifications must be established by visual inspection before repair, and 2) multiple-use pallets that can be used more than 10 trips before needing repairs based on known performance specifications. Multiple-use pallets can only be repaired with new materials, according to NWPCA standards. Pallets must be repaired if more than 20 percent of components are damaged. Limited use pallets' stringers or blocks may not be repaired; rather, all missing parts must be replaced. The replacement wood must be of equivalent or stronger species. No specific pallet performance level is ensured, however, by following the pallet repair requirements.

The Defense Logistics Agency (DLA) procures pallets for federal government agencies (primarily the Department of Defense) through the Defense Industrial Supply Center in Philadelphia, Pennsylvania. DLA uses over 20 different national stock numbers (NSNs), each of which specifies the size and shape of the pallet and the type of wood to be used. The Army, Navy, Air Force, and Marine Corps may be interested in using remanufactured pallets because they cost less than new pallets. The Defense Depot Susquehanna, Pennsylvania (DDSP) has been remanufacturing wood pallets and using them in military distribution. The U.S. Army Logistics Support Activity Packaging, Storage, and Containerization Center is assisting DDSP in testing and evaluating remanufactured wood pallet designs with the goal of achieving a performance-based document, supported by extensive testing, that will enable DDSP to remanufacture pallets for military and federal agency use. Although the document is

not ready for release, it will limit the intended use of remanufactured pallets to a few applications where it makes sense.

3. Preference Program

EPA recommends that, based on the recovered materials content levels shown in Table 20, procuring agencies establish minimum content standards for use in purchasing pallets.

Table 20
Recommended Recovered Materials Content Levels for Pallets
Containing Recovered Wood, Plastic, or Paperboard

Product	Material	Postconsumer content (%)
Wooden pallets	Wood	95 - 100
Plastic pallets	Plastic	100
Paperboard pallets	Paperboard	50

Note: EPA's recommendation does not preclude a procuring agency from purchasing pallets manufactured from another material. It simply requires that a procuring agency, when purchasing pallets made from wood, plastic, or paperboard, purchase these items made with recovered materials when these items meet applicable specifications and performance requirements.